Comparing Corruption in Ethiopia and Sudan

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ABSTRACT

We use two data bases, one on Ethiopia and the other relating to Sudan, to analyse corruption. In the case of Sudan, the focus is on concerns with corruption as measured by whether the individual identifies this as the most important issue facing the country. In Ethiopia the focus is on the perceived corruption of state agents at the local level. Concern with, and perceptions of, corruption increased with education and as the individual aged. They were also influenced by local conditions, in the case of Sudan by the quality of local services, and in Ethiopia, by local drought conditions.

Key words: Perceptions, education, corruption, locality, probit regression

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1. Introduction

Corruption is perceived as a problem in many countries. In Sub-Saharan Africa the problems are particularly serious. Table 1 shows that Sub-Saharan Africa compares poorly with other developing countries in the world. However, the Middle East, North Africa and the Arab world are even worse. These are all areas relatively close to the two countries we are studying. Compared with these Sudan is worse, and has deteriorated within this short time frame. Ethiopia on the other hand is markedly better and has shown signs of improvement. This data relates to the CPIA transparency, accountability, and corruption in the public sector rating. Other indices confirm this. For example in Transparency International's 2013 Corruption Perceptions Index[1] Ethiopia is the 111th best country out of 177, whilst Sudan is 174th. The only countries worse than Sudan are Afghanistan, North Korea and Somalia.

Insert Table 1 about here.

Corruption is an important issue and can have adverse effects on both an economy and society. Corruption not only imposes a tax on public services and private sector activity, but also leads to what are possibly severe efficiency consequences (Krueger,1974; Shleifer and Vishny, 1993). Seligson (2002) finds that independent of socioeconomic and demographic variables, exposure to corruption erodes belief in the political system in four Latin American countries. Seligson (2006) found that those who experience corruption, of which being asked for a bribe is a component part, are less likely to believe in the legitimacy of their political system. Supporting this, Sun and Wang (2012) conclude that negative actions by governments, including corruption and the abuse of privilege, significantly reduce trust in government. Even in high income democracies, bribery and corruption have been found to be associated with large and more complex public sectors that are less susceptible to political and hence electoral oversight (Hamilton, 2013).

The purpose of this current paper is to delve into this issue further by examining what people in Ethiopia and Sudan actually think about corruption and how this differs both

[1] http://www.transparency.org/cpi2013/results

spatially within the countries and across socio-economic conditions. This is being done in part to compare the two data bases. In addition these are similar countries, both dominated by agriculture and sharing a common border. But, as we have seen, Ethiopia is improving in terms of corruption, whereas Sudan is one of the worst countries in the world. We are hoping in this study to gain understanding on why this should be so, as well as to test hypotheses common to both.

The paper proceeds as follows. In the next section we present some background information upon the two countries and look at the literature on corruption perceptions. We then present the data we will be using for both countries. There then follows a full analysis of both countries with respect to corruption This analysis will firstly comprise of a discussion of the summary data. We will then analyse corruption at the regional and then individual level using regression analysis. Finally we conclude the paper. The measures of corruption we will be analysing are not the same in the two countries. In Sudan we will be focusing on corruption concerns, as reflected by the proportion of people who view it as the most pressing problem facing the country. In Ethiopia we will be examining people's perceptions of corruption amongst various state agents. The fact that the two questions we focus on are different is both a plus point and a negative one. On the positive side, it allows us to examine the issue from two differing perspectives. On the negative side it prevents us fully replicating the analysis in the two countries. Despite this, common themes emerge in the impact of education and the impact of both individual socio-economic characteristics and the characteristics of the individual's locality. This research, being based on individual perceptions, meets Svensson's (2005) call for more work at the micro level on how much corruption actually occurs in specific contexts.

2. Background to the Study

2.1 Sudan

Sudan is predominantly an agricultural country and most of the land is divided into a number of exclusive tribal areas (dars). The 'tribe' plays an important role in governance. The various tribes have their own institutions, and their economies, although for most areas predominantly agricultural, differ substantially in part because of substantial climatic differences (Nugent and Sanchez, 1999). The background to our analysis are the several conflicts which have beset the country in recent decades, indeed almost since independence from the UK in 1956. Since then military regimes have tended to favour the centre and the north of the country, and since 1984 have also been Islamic-oriented. The dominant religion in Sudan, as opposed to Sudan together with South Sudan, is Sunni Islam, with a small Christian minority. The

conflicts resulted in the establishment of the Sudan People's Liberation Movement (SPLM), whose goal was to fight Islamist imposition (Johnson, 2003). The Comprehensive Peace Agreement of 2005 eventually led to the creation of an independent state, South Sudan in 2011, ending a civil war in which more than two million people had died since 1989 alone. But this has not ended all conflict within Sudan, and since then Sudan has been fighting rebels in the East (until 2006), as well as the Sudan People's Liberation Movement-North (SPLM-N) in Southern Kordofan and the Blue Nile states. This is in addition to a separate conflict in the western region of Darfur beginning in 2003, which has displaced nearly two million people and caused an estimated 200,000 to 400,000 deaths and the ongoing humanitarian crisis caused by the civil war in South Sudan. Much of this conflict stems from the desire of the national government and the political elite to promote a brand of Islamic culture and religion throughout the entirety of the country. There is also substantial hostility between the different tribes. The army has struggled to deal with this and has taken to arming tribal militias, which has on occasion exacerbated inter-tribal conflict (Bassil, 2014). More generally, Zain (1996) has argued that the state has played little direct role at the local level, other than administration, giving a greater role to the tribal elites, with the expectation that they will promote the state's interest. This, of course, also opens the door for substantial variation in corruption and corruption perceptions at the local level within the country. Corruption is indeed widespread throughout the country. It includes bureaucratic corruption, corruption with respect to the police, the judiciary and medical services and according to Transparency International extends to political corruption[2].

2.2 Ethiopia

Ethiopia is unique amongst African countries in never having been a colony, apart from a brief period of Italian rule between 1936 and 1941. Emperor Haile Selassie was deposed by a military coup in 1974, being replaced with a socialist state. This in turn was overturned some two decades later and in 1995 Ethiopia's first parliamentary elections were held. The winner of that election, Melese Zenawi, remained prime minister until his death in 2012, when he was replaced by his deputy. It is primarily an agricultural country and the value added of agriculture amounted to approximately 48.6% percent of GDP in 2012[3]. The great majority of the population depend directly on agriculture for their livelihoods and many others do so indirectly. There is a large land area and in much of the country water resources are

[2] http://www.transparency.org/files/content/corruptionqas/342_Corruption_and_anti-corruption_in_Sudan.pdf

[3] Obtained from the World Bank's Development Indicators.

substantial. But there are large pockets of the country where this is not so and people regularly suffer from drought. The literature has tended to regard Ethiopia unfavourably in terms of agricultural productivity (Spielman et al., 2010). Dercon and Christansen (2011) commented that cereal yields in Ethiopia were currently only about 1,250 kg/ha, compared with 2,500 and 4,500 kg/ha in South and East Asia respectively. However, this unfavourable record may no longer be correct. There has been a substantial increase in cereal production to 18,809,959 metric tons in 2012, up from 9,532,780 metric tons in 2003, an increase of 97.3%. This compares to an increase of 18.8% in South Asia over the same time period and is also substantially greater than most neighbouring countries. Clearly Ethiopia is no longer performing as badly as in the past and on this measure at least may actually be counted as something of a success story. It is to be expected that this success, as it gradually filters through to the economy, will result in more favourable attitudes to the governance structure. There is evidence of low official tolerance for corruption and also very low levels of policy level corruption (Plummer, 2012). Fighting corruption in the public sector is also a key part of the government's Growth and Transformation Plan. However, the data mentioned earlier indicates that although better than many countries in the region, corruption is still a problem

2.3 Perceptions of Corruption

There is some debate about how to exactly interpret perceptions of corruption and the nature of their relationship with actual corruption. Leaving aside the question of whether we can actually use a single measure to define such a diffuse concept as corruption, perceptions of corruption may still be a guide to actual corruption within a country and also between countries. Thus corruption perceptions form the basis for Transparency International's Corruption Index which we have already cited (Lambsdorf, 2003) and the World Bank's Governance Indicators (Kaufmann et al., 2005), which we have also cited. Using perceptions about corruption overcomes the difficult problems of both measuring, and indeed defining, corruption directly. But it does raise the question of how those being surveyed form their perceptions in the first place (Olken, 2009). This is of course the question we seek to answer to some degree in this paper. To anticipate some of the answer, we find that such perceptions differ according to socio-economic characteristics, e.g. education, which suggests that some individual's at least have erroneous perceptions of corruption and hence measures based on an average of perceived corruption, amongst a representative sample of people from the country are likely, to be misleading. There is also evidence that perceptions of corruption are greatest amongst the worse-off, either in terms of their own situation or the locality in which they live.

As might be gathered from Svensson's (2005) comments mentioned earlier, there has been little work done in questioning how individuals perceive corruption and then translate such perceptions into concerns. There has been some work at higher levels of aggregation, e.g. regions within a country (Sharafutdinova, 2010) and between countries (Davis and Ruhe, 2003), but less on individuals themselves. One important analysis is that by Olken (2009). In his empirical work he found that there was a relationship between perceived and actual corruption. He also found perceived corruption to increase with education, decline with age and was less for women. He did not use any variables relating to the individual's location. There has been some work done on corruption in Ethiopia. Pathak et al (2007) surveyed 400 respondents in various parts of Ethiopia. They did obtain data on socio economic characteristics, but did not then link this with perceptions of corruption. They did, however, conclude that corruption affected local lives, and public sector red-tape was seen as the biggest hurdle to improving government-citizen relationships.

3. Methodology and Data

We argue that perceptions of corruption are linked to actual corruption within the country. If this is all there is to it, then perceptions will be randomly distributed around a simple constant term. If there are regional differences within the country, then regional dummy variables will also be significant, but no other variables. If however, such perceptions are also based on local realities, the location variables will also be significant. Finally there are the variables which reflect the individual's knowledge. In the literature, age and education have been found to be significant in this respect. Gender too may reflect knowledge if there tends to be different gender roles within a country. But individuals may also get knowledge from those around them, and thus the socio-economic characteristics of others in their location may also be relevant. Finally, direct experience of corruption, e.g. being asked for a bribe, is expected to influence perceptions of overall corruption within the country.

There is also evidence that people are more favourable to governments, the better is their own position. This links in with Putnam's (2000) observation that in all societies the "have-nots" are less trusting than the "haves" probably because they are treated with less respect. In our analysis we will differentiate the haves and the have-nots both in terms of their own position and the characteristics of their locality. In terms of the latter we argue that better public services generate trust in government and less perceived corruption. Although it is also possible that poor public services are poor because of corruption.

Within our study we will be analysing perceived corruption in Ethiopia amongst different public servants. These are local, e.g. *kebele* or *woreda* civil servants and hence any corruption is at the local level. The Sudan variable we analyse is both more general in terms of its scope, but also one step removed from actual perceptions of corruption. It uses data on those who perceive corruption as being the most important problem facing the country. Hence it also depends upon other issues and how important they are. Nonetheless, at any one point in time, those are a given for a country as a whole, and we anticipate that increased concern with corruption makes it more likely that the individual will identify this as their most important problem. Hence it is linked to perceptions of corruption, but is also linked to the perceived damage that corruption is doing to the country. If people perceive substantial corruption, but do not believe it to be damaging the country, then they are unlikely to identify this as their most important issue. It is worth emphasising that despite the deep problems facing Sudan, almost one quarter of those asked, identified corruption as the most important issue.

The Sudan dataset was collected by Sudan Polling and Statistics Center (SPSC) in collaboration with the UK's Department for International Development on 11-21 July 2013 and 3-5 June 2014 (see Hamilton and Hudson, 2014 for details). The survey covered all 15 states which now constitute Sudan. The sampling proceeded as follows: (i) the probability that any given locality was selected was proportional to size. Four localities were chosen from each state and a cluster was randomly selected from each of these; (ii) households in the locality were randomly selected with a replacement sampling strategy; (iii) finally an individual who was 18 years or older, was selected from each household, using the Kish Table method for selection, to respond to the survey. Field interviewers were allocated to their own hometown or countryside. It was felt that this would encourage a capacity to understand cultural, social and political conditions. This process resulted in 229 localities being surveyed in both years[4] – both rural and urban. The survey is done in less than ideal conditions, with considerations of security often being a concern. But these concerns did not stop the survey and these problems add to the value of the survey data collected.

The data in Ethiopia were obtained from the Woreda and City Benchmarking Survey (WCBS) undertaken in 2014 using a multi-stage stratified sampling approach based on the remoteness and food security levels of households (World Bank, 2012[5]). Within each region the sub-sample size was determined by population (based on census data). Data was collected

[4] The localities differed in the two years.

[5] http://web.worldbank.org/WBSITE/EXTERNAL/EXTMODELSITE/EXTCOUNTRYMODEL/0,,contentMDK:22838982~menuPK:3968189~pagePK:64027988~piPK:64027986~theSitePK:223224,00.html

on 326 *kebeles* in 48 *woredas*[6]. In total 7,429 individuals were interviewed. Two separate surveys were done for rural and urban areas. We focus on the former, partly because it has a much greater number of observations, but also as already emphasised Ethiopia is predominantly an agricultural country. All the variables are summarised in Table 2.

Insert Table 2 about here.

4. Sudan

4.1 The Data

Table 3 presents summary data on corruption concerns in Sudan, i.e. those people who responded that corruption was the most important issue. We can see that overall almost a quarter of those surveyed thought this to be the case. The proportion went down in 2014. This does not necessarily signal a decline of concern in absolute terms as other issues may have become more pressing in 2014. Of more concern than the variation over time is the variation across individuals. Such concern appears less for the young, the less well educated and the 'rich'. It is greater for those who live in towns, those who work and particularly those who work for government. The latter is interesting, although we do not know whether this reflects direct experience or greater knowledge of the problem as the government tries to tackle corruption. There are also substantial variations across service quality. With one exception, in all cases poor service quality is linked with greater perceived corruption. The exception was electricity. We turn to this later. Finally there are substantial differences within Sudan. Concern is greatest in Sennar and Khartoum. It tends to be least in North Darfur and Blue Nile. Again we emphasise that these are concerns relative to other issues.

Insert Table 4 about here

Insert Figure 1 about here

The link with education is emphasised in Figure 1. It is based on the average response and average education in each location and is restricted to those locations with at least 5 observations. Most noticeably of the eleven highest observations for corruption concerns, all

[6] The *kebele* is the lowest administrative tier in Ethiopia's federal structure, the *woreda* will consist of a number of *kebeles.*

eleven are associated with areas of high average education. Overall this suggests that high levels of education are not always linked to substantial corruption concerns, as other factors are also relevant, but nonetheless, the greatest concern is associated with areas where there are high levels of education.

4.2 Location Based Regression Results

Insert Table 4 about here

We explore these impacts further with the regression analysis. Firstly we focus on regressions based on data defined at the locality, i.e. the average response or characteristics based on those in the individual's location. The results are shown in Table 4. In 4.2 we exclude locations with less than five observations. The third set of regressions, 4.3, only included service quality variables which were significant. Concern most notably declines with the extent to which income covers needs. This suggests that people who live in poor areas may see corruption as a cause of their problems. With respect to the service quality, as we might have expected from the raw data shown in Table 3, concerns increase with the quality of electricity services, but declines with the quality of the police and sanitation. There is substantial collinearity between perceived corruption of the police and the courts, and the former only became significant when the latter was omitted from the regression. Noticeably in this regression, average requests for a bribe is not a significant variable.

4.3 Individual Based Regression Results

Table 5 shows the results of the individual based regressions estimated by binomial probit. In 5.1 we show the results with just individual socio-economic-characteristics and fixed effects for the regions and the 2013 observations. Concern with corruption increases nonlinearly with age and education and declines with the individual's relative income. The latter indicates that as people's incomes are more able to meet their needs their concern with corruption declines. The impact of education is significantly less for women. In the next column we add the location based variables and in the final column we include just those variables which are significant. It is upon this which we now focus. The three socio-economic variables already identified remain significant, all at the 1% level of significance. Turning to the location based variables the more frequent are requests for a bribe, the greater is the concern over

corruption[7]. The remaining significant location based variables are all related to services. The better are hospital, sanitation and school services, the less concerned people are about corruption. However, the reverse is the case with respect to electricity. Finally the regional variables, which are not shown in Table 5, are all jointly significant at the 1% level of significance.

Insert Table 5 about here

4.4 Interpreting the Sudanese Results

The results show that both socio-economic, locational and regional variables all significantly impact upon concern with corruption. The impact of age and education may well reflect knowledge, with the more people learn about corruption in the country, partially in relation to other countries, the more they become concerned. The significance of the relative income variable may reflect self-interest, that people are most concerned with corruption when they themselves are struggling with their income. Most of the location based service variables have an impact such that better quality services lead to reduced concern with respect to corruption. This may reflect self-interest again, this time with the quality of the individual's life, as reflected by publicly provided services, impacting on their perceptions of corruption. On the other hand it is also possible that services are perceived to be poor because of corruption. That is money which is intended to be spent on improving services is perceived to be diverted into the hands of corrupt officials. The opposite effect of electricity to the other services, is consistent with earlier research which found that this had an opposite effect to other services in determining attitudes to tribal chiefs (Hamilton and Hudson, 2014). The interpretation put on this was that electricity differs from the other services in being a catalyst for economic change. The other services improve people's lives, without changing, at least in the short-term, economic opportunities. Electricity opens up the way for new industries and new ways of working with older industries. But new industries often encounter regulatory constraints and herein lies the potential for increased corruption.

5. Ethiopia

5.1 The Data

[7] As table 1 indicates, the bribery variable increases as requests for a bribe decline in frequency. Hence the negative coefficient shows that as bribery requests decline concern over corruption also declines.

Insert Table 6 about here

Table 6 presents summary data. The variations appear relatively minor – although this may be a consequence of using data measured on a four point scale. The disadvantaged do tend to perceive more corruption than others. For example, those who at times of the year have no food, perceive the police as substantially more corrupt than other people. There are also substantial differences between locations. Figure 2 again shows the relationship with education. This time it is noticeable that in areas with an average value less than 0.5, indicating low levels of corruption, all have an education average of less than 13. That is localities characterised by individuals with a relatively low level of education tend to perceive less corruption. The upward slope again indicates that as education increases, people perceive more corruption, in this case with respect to the police

Insert Figure 2 about here

5.2 Location Based Regression Results

We again explore these impacts further with the regression analysis, once more firstly focusing on regressions based on data defined at the locality. The dependent variables in Table 7 relate to perceived corruption in both the *kebele* and the *woreda*. Perceived corruption tends to decline as subjective wealth increases. – Even more strongly is the impact of drought and as this increases so perceived corruption also increases. The same is true for education. The impact of food shortages is opposite to drought, particularly with respect to officials and civil servants in the *Woreda*. Water shortages are of course dominated by the weather. But also of relevance is the infrastructure which can be invested in to deliver water to the individual or to supplement water sources. In that sense local officials and civil servants may be blamed for inadequate water and the possibility exists that this is indeed due in part to corruption. We delay interpretation of the differing impact of the food shortage until later.

Insert Table 7 about here

5.3 Individual Based Regression Results

Table 8 shows the results based on regressions at the level of the individual. These are estimated by ordered probit, with regional fixed effects included. There are substantial differences between the estimated models. But in all of them perceived corruption increases

as people get older. In addition women tend to be more likely to perceive corruption than men and in most cases corruption perceptions increase with subjective wealth, although this is compensated for by the opposite impact of locational wealth. Individual education is only weakly significant in two equations. But again to compensate for this, location based education is significant in all regressions, and in all cases perceived corruption increases as the average level of education in the individual's locality increases. This suggests that people tend to form their opinions collectively. Location based drought also increases perceived corruption. This often reinforces the individual's reaction to their own drought. But there is also evidence that people respond to their own drought by increasing trust in the courts and the police.

Insert Table 8 about here

5.4 Interpreting the Ethiopian Results

In general drought and food shortages increase perceptions of corruption. There is only limited evidence of the reverse effect, for police and the courts, relating to individual responses to drought, but this is against the backdrop of a very strong counter effect at the level of the locality. Thus overall the evidence is that these two problems increase perceptions of corruption. This is consistent with both the hypothesis that people respond to adversity by blaming the state and the agents of the state. But it is also possibility that drought and food shortages may be linked to corruption with respect to infrastructure projects and emergency provision of food. The regressions largely reinforce the results of the location based regressions in the previous section, although there was now no evidence that location based food shortages lowered perceptions of corruption, an impact which is being captured by the individual responses.

6. Conclusions and Implications

The contrasting analyses for Ethiopia and Sudan showed two very clear trends. Firstly, the importance of education. In Sudan it was individual education and in Ethiopia it was the average level of education in the community. The difference, may be due to chance, but also may be due to the Ethiopian results being based on rural areas where communities are smaller than in urban areas, and also focused on corruption of local state agents, rather than in the country as a whole. We should also emphasise that in both countries concern with, or knowledge of, corruption, increased with age, which may also be a reflection of knowledge. The second point which we should emphasise is that individual perceptions of, and concern

with corruption, are impacted upon both by the individual's characteristics and experiences and also by those in the locality in which they live. With respect to the latter, in Sudan it was the quality of services which were important. In Ethiopia it was more the socio-economic characteristics of the community which were more important together with localised drought conditions. The fact that there are such differences within the countries geographically, between locations and states, emphasises that it is too simplistic to label a whole country as being highly corrupt, and probably vice versa. There will be areas of the countries where corruption is much less of a problem than other areas, and, equally, areas where it is a more substantial concern.

This is not to say that if we had had information on service quality in Ethiopia, that too would not have been significant. The significance of both local service quality and local drought could signify that as an individual's quality of life worsens they become more sensitive to corruption. But it could also signify that they identify poor services and susceptibility to drought to a lack of infrastructure investment which they link with corruption. The differing nature of the data bases is both a bonus and a limitation. On the one hand it prevents us doing exactly comparable regressions. On the other hand it allows us to analyse different aspects of the issue of corruption both with respect to the independent variables and also the dependent variables themselves. It would also have been useful to have measures of perceived corruption, covering both local and national levels. With respect to Sudan it was concern with corruption which we analysed, in the form of whether people felt it was the most important issue being faced by the country. With respect to Ethiopia it was perceptions of corruption amongst various agents of the state at the local level. The fact that education was important in both sets of regressions suggests that as the countries increase their average levels of education, the people in the country as a whole will become both more aware and more concerned with corruption. This is consistent with the observation by Svensson (2005) who noted a negative relationship, at the country level, between human capital and corruption. If such concern can impact upon policy and politicians, as argued by Olken (2009), it may gradually lead to a decline in corruption in these countries.

References

Bassil, N. R. (2014). 7 Beyond 'culture' and 'tradition' in Sudan. Informal power in the greater Middle East, Hidden Geographies, 102.

Davis, J. H., & Ruhe, J. A. (2003). Perceptions of country corruption: Antecedents and outcomes. Journal of Business Ethics, 43(4), 275-288.

Dercon, S., & Christiaensen, L. (2011). Consumption risk, technology adoption and poverty traps: Evidence from Ethiopia. Journal of Development Economics, 96(2), 159-173.

Hamilton, A. (2013). Small is beautiful, at least in high income democracies: the distribution of policy making responsibility, electoral accountability, and incentives for rent extraction. Policy Research Working Paper, no WPS 6305, Washington DC: The World Bank.

Hamilton, A. and Hudson, J. (2014). Bribery and identification: Evidence from Sudan, University of Bath Working Paper.
Johnson, D. H. (2003). The Root Causes of Sudan's Civil Wars (Vol. 5). Bloomington: Indiana University Press.
Kaufmann, D., Kraay, A., Mastruzzi, Ma. (2005) Governance matters IV: Governance indicators for 1996–2004, mimeo, World Bank.
Krueger, A. O. (1974). The political economy of the rent-seeking society, American Economic Review 64, 291–303.
Lambsdorff, J. G. (2003) Background paper to the 2003 corruption perceptions index, mimeo: Transparency International.
Nugent, J.B. and Sanchez, N. (1999). The local variability of rainfall and tribal institutions: The case of Sudan, Journal of Economic Behavior and Organization, 39, 263–291
Olken, B. A. (2009). Corruption perceptions vs. corruption reality. Journal of Public Economics, 93, 950-964.
Pathak, R. D., Singh, G., Belwal, R., & Smith, R. F. I. (2007). E-governance and corruption developments and issues in Ethiopia. Public Organization Review, 7, 195-208.
Plummer, J (ed) (2012) Diagnosing Corruption in Ethiopia: Perception, Realities and the Way Forward. Washington DC: World Bank.
Putnam, R. D. (2000). Bowling Alone: The Collapse and Revival of American Community, New York: Touhstone.
Seligson, M.A. (2002). The impact of corruption on regime legitimacy: A comparative study of four Latin American countries, Journal of Politics, 64, 408-433.
Seligson, M.A. (2006). The measurement and impact of corrupt victimization: Survey evidence from Latin America, World Development, 34, 381-404.
Sharafutdinova, G. (2010). What explains corruption perceptions? The dark side of political competition in Russia's regions. Comparative Politics, 147-166.
Shleifer, A., Vishny, R.W. (1993). Corruption. Quarterly Journal of Economics 108, 599–617.

Spielman, D. J., Byerlee, D., Alemu, D., & Kelemework, D. (2010). Policies to promote cereal intensification in Ethiopia: The search for appropriate public and private roles. Food Policy, 35(3), 185-194.

Svensson, J. (2005) Eight questions about corruption, Journal of Economic Perspectives, 19, 19-42.

Sun, W.K. and Wang, X.H. (2012). Do governments affect social trust? Cross city evidence in China, Social Science Journal, 49, 447-457.

Zain, M. E. (1996). Tribe and religion in the Sudan, Review of African Political Economy, 23, 523-529.

Table 1: Comparing Corruption in Ethiopia and Sudan with other Areas

Location	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Ethiopia	2.50	2.50	2.50	2.50	2.50	2.50	3.00	3.00
Sudan	2.00	2.00	2.00	2.00	1.50	1.50	1.50	1.50
Arab World	2.50	2.50	2.60	2.50	2.40	2.30	2.30	2.20
Developing Countries Only:								
Europe & Central Asia	2.65	2.65	2.63	2.56	2.61	2.67	2.88	3.00
Latin America & Caribbean	3.44	3.44	3.44	3.44	3.50	3.39	3.39	3.39
Middle East & North Africa	2.75	2.75	2.75	2.75	2.75	2.50	2.50	2.25
Sub-Saharan Africa	2.80	2.77	2.77	2.74	2.72	2.71	2.78	2.71

Notes: Source World Bank's World Development Indicators. The data shows the CPIA transparency, accountability, and corruption in the public sector rating (1=low to 6=high)

Table 2: Data definitions

Sudan	
Corruption Concern	Coded one if the individual cited corruption as the biggest issue facing the country
Bribe	Whether have been asked for a bribe, responses coded 1 to 4, i.e. from in the last month, six months, year, and never.
Age	Age in years
Education	Coded from 1 (illiterate) to 9 (PhD) as an increasing measure of education.
Income	Household income: Coded 1 (100-500 STG), 2 (500-1000 STG), 3 (more than 1000 STG), monthly income
Relative (to needs) income	Coded 1 if the household income was not enough to cover the household bills, 2 if it was enough to cover the household bills, 3 if it was enough to cover necessary expenses with nothing left over and 4 if it was sufficient to allow saving.
Marital variables	Binary variables taking a value of one if the person was single/married/ divorced or widowed.
Male	Coded 1 if the individual is male
Family size	Number of people currently living in the individual's household.
Urban	Coded 1 if lives in an urban area.
Works	Coded 1 if in employment.
Works for Government/Private firm	Coded 1 if works for the Government/Private company.
Locality variables	(*average of responses in individual's locality)*
Service	individual response coded 1 if the services they received were at a very low level to 5 if they were excellent. Services include electricity, water, sanitation, school, hospital, police, the courts and water.
ETHIOPIA	
Dependent variables	
Perceived as being corrupt	(*Kebele*: civil servant, official, police, courts, *Woreda*: Civil servant, official), Coded 1 for none are corrupt to 3 for all are corrupt
Independent variables	
Age	Age in years
Education	Coded from 1 (no schooling) to 24 (degree) and 25 above degree, as an increasing measure of education.
Male	Coded 1 if the individual is male
Family size	Number of people currently living in the individual's household.
Subjective wealth	Coded 1 if the individual classified themselves as 'poor', to 4 for 'not poor'
Grows crops	Coded 1 if the individual grows crops, otherwise 0
Rears animals	Coded 1 if the individual rears animals, otherwise 0
Drought	Coded 1 if the individual suffers from regular periods of drought in the sense of a shortage of drinking water, otherwise 0

Table 3: Corruption Concerns in Sudan across individuals, localities and regions

	All	2014	2013		All	2014	2013
All	0.245	0.185	0.317	*Region*			
Socio-economic characteristics				Aljazeera	0.327	0.30	0.355
Age<34	0.189	0.153	0.223	Khartoum	0.378	0.30	0.457
Education<5	0.226	0.171	0.273	Algadareaf	0.32	0.213	0.427
Income=1	0.396	0.245	0.476	North State	0.123	0.0	0.247
Bribe<4	0.255	0.198	0.317	Red Sea	0.343	0.28	0.407
Married	0.285	0.199	0.359	Blue Nile	0.152	0.171	0.133
Single	0.297	0.226	0.373	Kassala	0.334	0.30	0.371
Gender=1	0.251	0.181	0.377	River Nile	0.323	0.213	0.433
Urban	0.28	0.205	0.368	North Darfur	0.125	0.156	0.098
Work	0.288	0.232	0.37	North Kordofan		0.217	0.047
	0.387						
Works for government	0.344	0.234	0.416	Sennar	0.413	0.467	0.36
Works for Pte Co.	0.27	0.237	0.29	South Darfur	0.143	0.015	0.276
Income supplemented	0.243	0.2	0.275	South Kordofan		0.164	0.053
	0.28						
Divorced/widowed women	0.276	0.15	0.48	West Darfur	0.216	0.193	0.238
Divorced/widowed men	0.265	0.197	0.332	White Nile	0.283	0.207	0.36
Services poor(i.e. <2.50							
Electricity	0.23	0.118	0.326				
School	0.286	0.164	0.361				
Police	0.267	0.164	0.364				
Sanitation	0.292	0.206	0.365				
Court	0.26	0.15	0.348				
Hospital	0.286	0.193	0.359				
Water	0.273	0.181	0.349				

Notes: The data reflects the average response, hence a value of 0.245 indicated that corruption was the most important issue facing the country.

Table 4: Location Based Results for Concern with Corruption

	4.1	4.2	4.3
Bribe	-0.0054	-0.0062	-0.0145
	(0.14)	(0.21)	(0.51)
Education	0.0341***	0.0334***	0.0383***
	(3.34)	(3.73)	(4.21)
Relative (to needs)	-0.0279	-0.0338**	-0.0293*
income	(1.50)	(2.09)	(1.86)
Absolute income	0.0139	0.0249	0.0235
	(0.73)	(1.48)	(1.36)
Electricity	0.0447*	0.0813***	0.0771***
	(1.71)	(4.41)	(4.63)
School	-0.0188	-0.0257	
	(0.54)	(0.93)	
Police	0.0137	-0.0166	-0.0363**
	(0.36)	(0.58)	(2.05)
Sanitation	-0.0131	-0.0643***	-0.0716***
	(0.41)	(2.82)	(3.60)
Courts	0.00056	0.005	
	(0.02)	(0.17)	
Hospital	-0.0882**	-0.039	
	(2.42)	(1.31)	
Water	0.0247	0.0137	
	(1.10)	(0.70)	
Dummy variable	0.1235***	0.1401***	0.1524***
for 2013	(5.52)	(7.10)	(7.91)
Constant	0.1583	0.1596	0.1266
	(0.93)	(1.25)	(1.02)
Observations	438	409	409
Log Likelihood	69.92	116	111.6
R^2	0.217	0.279	0.263

Notes: Estimated by OLS; t statistics in parentheses. ***/**/* denotes significance at the 1%/5%/10% levels of significance. Standard errors have been corrected for heteroscedasticty. Variables defined in Table 2.

Table 5: Individual Based Results for Concern with Corruption

	5.1	5.2	5.3
Married	-0.047	-0.0075	
	(0.92)	(0.14)	
Log age	0.2575***	0.1947**	0.1843***
	(3.37)	(2.46)	(2.86)
Gender	-0.128	-0.135	
	(1.02)	(1.04)	
Education	0.1239***	0.1126***	0.0986***
	(7.17)	(5.97)	(8.17)
Urban	-0.0399	-0.0212	
	(0.89)	(0.46)	
Absolute income	-0.00091	-0.026	
	(0.03)	(0.83)	
Relative (to needs)	-0.0515***	-0.032	-0.051***
income	(2.94)	(1.65)	(2.99)
Log of family	0.0403	0.0649	
size	(1.03)	(1.59)	
Works	0.0545	0.0791	
	(0.88)	(1.25)	
Works for	-0.0657	-0.0846	
government	(0.95)	(1.20)	
Work for private	-0.0069	-0.0653	
firm	(0.08)	(0.76)	
Women's	-0.060***	-0.0652***	-0.046***
education	(2.68)	(2.83)	(5.77)
2013 Dummy	0.4514***	0.3774***	0.385***
variable	(9.81)	(7.23)	(8.60)
Village Based Variables			
Bribe		-0.1932***	-0.1667**
		(2.70)	(2.42)
Education		-0.0017	
		(0.06)	
Relative (to needs)		-0.0961**	
income		(2.06)	
Absolute income		0.0866	
		(1.52)	
Electricity		0.1446**	0.1748***
		(2.53)	(4.24)
School		-0.2068***	-0.1287**
		(2.85)	(1.96)
Police		-0.0739	
		(1.00)	
Sanitation		-0.1542***	-0.1275***
		(2.65)	(2.64)
Courts		0.0341	
		(0.41)	
Hospital		-0.1173	-0.1491**
		(1.49)	(2.03)
Water		0.1365**	
		(2.00)	
Constant	-2.085***	-0.4517	-0.5523
	(7.01)	(0.94)	(1.35)
Observations	4257	4154	4405
Log Likelihood	-2241	-2159	-2323
X^2	453.6	505.7	506.8

Notes: Estimated by probit; t statistics in parentheses. ***/**/* denotes significance at the 1%/5%/10% levels of significance. Standard errors have been corrected for heteroscedasticty. Regional dummy variables included. Variables defined in Table 2, X^2 represents the likelihood ratio test statistic.

Table 6: Summary Data for Ethiopia

	Kebele				*Woreda*	
	Civil servant	Official	Court	Police	Civil Servant	Official
Individual Characteristics						
Age<35	0.778	0.936	0.972	0.94	0.755	0.928
Low education	0.815	0.939	1.022	1.009	0.787	0.933
Poor	0.862	0.97	1.011	1.003	0.819	0.954
Male	0.806	0.919	1.016	1	0.762	0.907
Drought	0.958	1.031	1.053	1.038	0.936	1.022
No Food	0.862	1.06	1.138	1.106	0.811	0.996
Crops	0.83	0.951	1.046	1.032	0.792	0.945
Animals	0.788	0.934	1.066	1.055	0.741	0.941
Regions						
Tigray	0.948	0.968	1.116	1.129	0.957	0.899
Amhara	0.963	1.113	0.96	0.938	1.055	1.089
Oromia	0.836	1.041	1.123	1.117	0.811	1.043
SNNP	0.635	0.624	0.854	0.782	0.484	0.613
BenushangulGumz	0.962	1.026	1.139	1.138	0.875	1.066
Afar	0.672	0.678	0.745	0.781	0.654	0.713
Somali	0.763	0.928	1.198	1.317	0.732	0.954
Gambela	0.679	0.741	1.074	1.091	0.481	0.704

Notes: The above represents the averaged response for perceived corruption of different officials, civil servants, etc. Basic variable coded 1(none are corrupt) to 3 (all are corrupt). Hence a value of 0.778 lies between some are corrupt and none are corrupt.

Table 7: Location Based Results for Perceived Corruption

	Kebele				*Woreda*	
	Officials	Civil Servants	Courts	Police	Officials	Civil Servants
	7.1	7.2	7.3	7.4	7.5	7.6
Subjective wealth	-0.1572**	-0.1998***	-0.0197	-0.0613	-0.1969***	-0.2404***
	(2.16)	(2.80)	(0.26)	(0.74)	(2.67)	(3.56)
Education	0.0409***	0.0203***	0.0234***	0.0188**	0.0383***	0.0172**
	(5.36)	(2.63)	(2.86)	(2.00)	(4.88)	(2.40)
Drought	0.3465***	0.3214***	0.2143***	0.1777**	0.3491***	0.3921***
	(5.17)	(4.86)	(3.14)	(2.52)	(5.29)	(6.15)
No Food	-0.2835*	-0.3142*	-0.0726	-0.2553	-0.3754**	-0.5337***
	(1.67)	(1.92)	(0.44)	(1.54)	(2.36)	(3.08)
Constant	0.909***	1.06***	0.817***	0.979***	1.032***	1.137***
	(4.18)	(5.18)	(3.53)	(4.25)	(4.86)	(5.80)
Observations	275	273	274	274	275	275
Log Likelihood	-77.64	-72.58	-105.2	-115	-82.4	-71.15
R^2	0.233	0.158	0.073	0.053	0.226	0.201

Notes: Estimated by OLS; t statistics in parentheses. ***/**/* denotes significance at the 1%/5%/10% levels of significance. Standard errors have been corrected for heteroscedasticty. Variables defined in Table 2.

Table 8: Individual Based Results for Perceptions of Corruption

	Kebele				*Woreda*	
	Officials	Civil Servants	Courts	Police	Officials	Civil Servants
	8.1	8.2	8.3	8.4	8.5	8.6
Individual based variables						
Log	0.1942***	0.1896***	0.3132***	0.3214***	0.2226***	0.1644***
age	(3.55)	(3.35)	(5.43)	(5.67)	(4.03)	(2.92)
Education	-0.0055	-0.003	0.006*	0.0036	-0.0057***	-0.0069*
	(1.48)	(0.79)	(1.65)	(1.00)	(1.58)	(1.80)
Male	-0.0632**	-0.0486	-0.0702**	-0.0878***	-0.1119***	-0.0794***
	(2.12)	(1.59)	(2.34)	(2.94)	(3.73)	(2.61)
Log	-0.0944***	-0.0423	0.0058	0.0157	-0.0486	-0.0629*
family size	(2.64)	(1.13)	(0.16)	(0.42)	(1.34)	(1.70)
Crops	0.0441	0.0913*	0.1764***	0.1987***	0.029	0.0164
	(0.89)	(1.69)	(3.48)	(3.91)	(0.56)	(0.32)
Animals	-0.0921***	-0.1374***	0.0677*	0.0575	-0.0761**	-0.1784***
	(2.64)	(3.68)	(1.84)	(1.54)	(2.15)	(4.94)
Drought	0.0552	0.3886***	-0.1024***	-0.0721*	0.0983***	0.3726***
	(1.45)	(9.89)	(2.65)	(1.88)	(2.64)	(9.61)
No food	0.3002***	0.0692	0.1712**	0.1827***	0.2303***	0.1429**
	(4.73)	(1.01)	(2.51)	(2.65)	(3.51)	(1.98)
Subjective	0.0284	0.0012	0.0436*	0.0694***	0.0273	0.0578**
wealth	(1.32)	(0.05)	(1.92)	(3.01)	(1.26)	(2.54)
Location based variables						
Subjective	-0.1423**	-0.2301***	0.0433	-0.0462	-0.1814***	-0.3006***
wealth	(2.28)	(3.56)	(0.67)	(0.71)	(2.96)	(4.53)
Education	0.056***	0.0437***	0.039***	0.0354***	0.0504***	0.0401***
	(8.78)	(6.55)	(5.97)	(5.35)	(7.97)	(5.86)
Drought	0.4015***	0.0525	0.5062***	0.443***	0.3298***	0.1788**
	(5.63)	(0.73)	(7.14)	(6.22)	(4.76)	(2.50)
No food	0.1399	0.0109	0.098	-0.1986	0.1661	-0.1005
	(0.80)	(0.06)	(0.56)	(1.14)	(0.93)	(0.55)
Observations	6033	5750	5798	5827	5956	5956
Log Likelihood	-6430	-6079	-6267	-6359	-6634	-6037
X^2	577.5	438.9	396.2	427.3	506.7	653

Notes: Estimated by ordered probit; t statistics in parentheses. ***/**/* denotes significance at the 1%/5%/10% levels of significance. Standard errors have been corrected for heteroscedasticty. Variables defined in Table 2, regional fixed effects are included in all equations. X^2 represents the likelihood ratio test statistic. As dependent variable increases, perceived corruption declines.

Figure 1: Location Corruption Concerns and Education

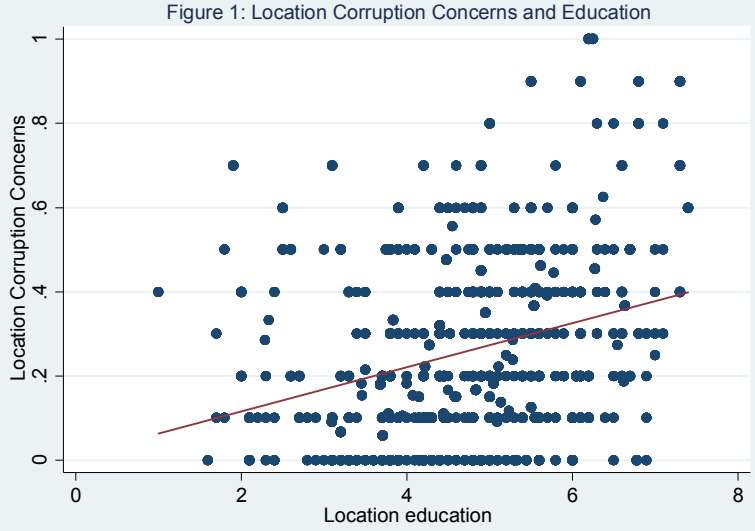

Figure 2: Location Perceived Police Corruption and Education